

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2017  
 DateRun: 12/25/2017  
 Experimenters: Alicia McCarthy, Hayley Byra  
 ClientType: General  
 ProjectNumber: Project #1  
 Substrates: Aluminum  
 PartType: Part  
 Contaminants: Oil  
 Cleaning Methods: Ultrasonics  
 Analytical Methods:

**Purpose:** To compare the effectiveness of alternative solvents to Trichloroethylene (TCE) when removing lubricating oils from aluminum alloy coupons.

**Experimental Procedure:** Pre-soiled aluminum parts (Oak 7a - CAS: 64742-53-6; 68909-65-9) and TCE cleaned parts were provided by Lytron. The contact angle of a TCE cleaned part was taken three times and then averaged. The average contact angle was used as a benchmark for the standard of cleanliness. This process was repeated with the pre-soiled parts to get a dirty contact angle. Parts were cleaned for five minutes using Opteon Sion and Tergo Metal Cleaner in a heated ultrasonic tank (95 F). Clean contact angles were taken three times per part and averaged for a final clean contact angle.

**Results:** The average contact angle for a TCE cleaned part was 93.97°. The TCE contact angle served as a benchmark for the standard of cleanliness.

Cleaner	Part #	Dirty Contact Angle	Average Dirty	Clean Contact Angle	Average Clean
Opteon Sion	1	44.86°	45.16°	79.26°	80.48°
		50.14°		79.06°	
		40.49°		83.13°	
Tergo Metal Cleaner	2	35.61°	43.88°	79.29°	86.34°
		43.46°		90.44°	
		52.58°		89.28°	

**Summary:**

<b>Substrates:</b>	Aluminum				
<b>Contaminants:</b>	Oil				
<b>Company Name:</b>	<b>Product Name:</b>	<b>Conc.:</b>	<b>Efficiency:</b>	<b>Effective:</b>	<b>Observations:</b>
Micro Care	Opteon Sion SF79	100%	80.48	<input checked="" type="checkbox"/>	Contact Angle
Micro Care	Tergo Metal Cleaning Fluid	100%	86.34	<input checked="" type="checkbox"/>	Contact Angle
Ashland Specialty Chemical Company	Trichloroethylene	100%	93.97	<input checked="" type="checkbox"/>	Contact Angle

**Conclusion:** The Tergo Metal Cleaner had the closest clean contact angle to the TCE cleaned contact angle. Tergo Metal Cleaner would be a more viable replacement for TCE based on the cleaning evaluation.